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NEWS

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Subject: Satellite Keeps Eye on Changing Delaware Coastal Zone

A lonely satellite orbiting the earth some 500 miles in the sky is providing information that will permit area planners to look years ahead and take preventive measures against developing problems that until recently might have gone undetected until it was too late.

Scientists at the University of Delaware's College of Marine Studies, under a National Aeronautics and Space Administration contract, are collecting data from Earth Resources Satellite (ERTS-1) as it passes over the Delmarva Peninsula every 18 days producing photographs showing how the Delaware shore and wetlands and Delaware Bay are changing.

Through this outer space photography and their own investigations on earth, the scientists are able to map environmental and land use trends in the area and to predict how these trends are likely to develop over the next decade.

Governmental planners, forewarned with this impartial scientific information, will be able to take steps to control land development, coastal erosion, the dumping of pollutants, and other man-made activities that over the long run would do irreparable damage to marshes and wetlands where most sea life is spawned, and to plan for the orderly development of those programs and services that are required of a growing population with its attendant needs for housing, highways, sewerage, water and other public services.

Simply stated, the system works like this: As the satellite sweeps over the Delmarva Peninsula it relays photos in green, red, and two near-infrared color bands to earth. Simultaneously, University of Delaware scientific teams conduct land, sea and air research surveys to correlate their first-hand information with that of the orbiting satellite.

The green photos probe several feet into the sea to detect changing turbidity, sedimentation, salinity, and other phenomena. Red photos also probe the sea, at lesser depths, and, with the near-infared photos, are used to detect changes in the land surface, in vegetation, ponds, estuaries and marshes and along the shoreline as well as on the surface of the sea.

Meanwhile, as many as 20 scientific investigators in several boats, two airplanes, and a number of land vehicles are conducting tests of their own.

The sea forces take water samples at various depths for analysis, drop dyes into the sea to trace ocean currents in the bay and conduct other tests delving into the changing characteristics of that body of water from Ocean City, N.J. to Ocean City, Md. Attempts to sample water from a helicopter have also been initiated.

Land researchers check the various wetlands and other coastal areas taking water samples in estuaries and ponds and checking vegetation for signs of deterioration.

In the sky overhead, a specially equipped RB-57 reconnaisance bomber, at 60,000 feet, and a U-2 "spy plane," also equipped with scientific gear, cruises at 65,000 feet taking photographs of the land and sea below.

The scientific information gathered by these land, sea and airborne investigators is closely correlated with the information being relayed from the satellite to doublecheck the accuracy of the conclusions drawn by the scientists.

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As a result of these studies, which have been underway for little over a year, U. of D. College of Marine Studies scientists have prepared numerous overlay maps of the entire Delaware coastal zone.

These maps clearly define areas of deteriorating wetlands, where most sea life is spawned and wildfowl nest, fortelling of the destruction of areas supporting the fragile balance of nature. The encroachment of land development and landfill operations with attendant destruction of this natural habitat through silt and pollution is also detected and closely charted. Dangerously high levels of toxic heavy metals, thermal effluent, and other forms of pollution have been discovered in the sea and indicated on the scientists' maps.

Dr. Vytautas Klemas, principal investigator of the research project, points out the need for this information, which he notes is recognized by those concerned with conservation, regulation and development of the coastal zone.

"The need for such information is made more acute," Dr. Klemas says, "by present and proposed projects destined to effect the entire coastal system. These projects include an ensemble of off-shore developments using deep-draft vessels, such as off-shore oil terminals; prospecting and mining activities along the Continental Shelf; the enlargement of the Chesapeake and Delaware Canal; the installation of waste treatment plants and nuclear generating stations; and general dredging and construction activities in the coastal zone."

Pointing out some of the problems his scientific team faces, Dr. Klemas said, "The performance of ERTS-1 has been above expectations. The only two drawbacks are the inability of the satellite's sensors to penetrate clouds or to resolve objects smaller than 200 feet on the ground. From 500 miles up, however, this is equivalent to seeing a penny from a distance of 900 feet. To resolve detailed features within limited areas we will continue to use aircraft. One hears much about radar's ability to penetrate clouds and active weather control experiments. Since neither of these techniques are at our team's disposal, cloud cover will remain a major factor affecting our aircraft and boat scheduling."

The information that Dr. Klemas and his team of university scientists will soon make available to state and regional planners will provide the hitherto unavailable luxury of being able to continually monitor changes throughout Delaware's coastal zone and Delaware Bay with every 18-day pass of the satellite.

Armed with such "eyes in the sky", our state and regional planners will more readily be able to take steps to prevent the despoilation of the natural heritage of future generations.

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